

## **MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY**

Waste Management and Remediation Division  
Waste and Underground Tank Management Bureau  
Solid Waste Section  
PO Box 200901  
Helena, MT 59620-0901

### **FINAL ENVIRONMENTAL ASSESSMENT**

#### **SECTION 1.0 – SOLID WASTE SECTION ROLES AND RESPONSIBILITIES:**

The Department of Environmental Quality's (DEQ), Solid Waste Section (SWS), is responsible for ensuring activities proposed under the Solid Waste Management Act, the Septage Disposal Licensure Act, the Integrated Waste Management Act, and the Motor Vehicle Disposal & Recycling Act are in compliance with current regulations. A land application site must first be approved by the county in which the site is located before the request for approval is submitted to SWS for review and approval. Each licensee is responsible for following the Administrative Rules of Montana (ARM) for Cesspool, Septic Tank, and Privy Cleaners and other restrictions and requirements put in place by the county in which the land application site is located.

#### **Purpose of the Environmental Assessment:**

In accordance with 75-1-102, Montana Code Annotated (MCA), the Montana Environmental Policy Act (MEPA) is procedural and requires the "adequate review of state actions in order to ensure that environmental attributes are fully considered by the legislature in enacting laws to fulfill constitutional obligations; and the public is informed of the anticipated impacts in Montana of potential state actions." According to MEPA, EA's are the procedural documents that communicate the process agencies follow in their decision-making. An EA does not result in a certain decision; but rather, it serves to identify the potential effect of a state action within the confines of existing laws and rules governing such proposed activities so that agencies make balanced decisions. The MEPA process does not provide regulatory authority beyond the authority explicitly provided in the existing statute.

The Septage Disposal and Licensure regulations establish the minimum requirements for the land application of septage wastes. The EA is the mechanism that DEQ uses to: 1) Disclose whether a proposed land application site meets the minimum requirements for compliance with the current laws and rules; 2) Assist the public in understanding the licensing laws of the Septage Disposal and Licensure program; 3) Identify and discuss the potential environmental effects of the proposed land application activity if it is approved and becomes operational; 4) Discuss actions taken by the applicant and the enforceable measures and conditions of the license designed to mitigate the effects identified by DEQ during the review of the application; and 5) Seek public input to ensure DEQ has identified all the substantive environmental effects associated with the proposed land application of septage, portable toilet waste, and graywater at the proposed location.

#### **Benefits and Purpose of Project:**

Septage is the liquid and solid material removed from a septic tank, cesspool, portable toilet, or similar treatment works that receives only waste and wastewater from humans or household operations. The land application of septage is an economical and environmentally sound practice. When properly managed, septage is a resource. When used as a soil conditioner, septage contains nutrients that can reduce reliance on chemical fertilizers for agriculture. A properly managed land application program recognizes the benefits of septage and employs practices to maximize the value of the material. Land application of septage benefits agricultural land by the addition of moisture, organic matter, and

nutrients to the soil and does not adversely affect public health. When the septage is being applied as a soil conditioner, the use is considered an application rather than a disposal because the materials in the septage benefit the soil by adding nutrients, moisture, and improving the soil tilth. This will help for better growth of the native pasture grasses.

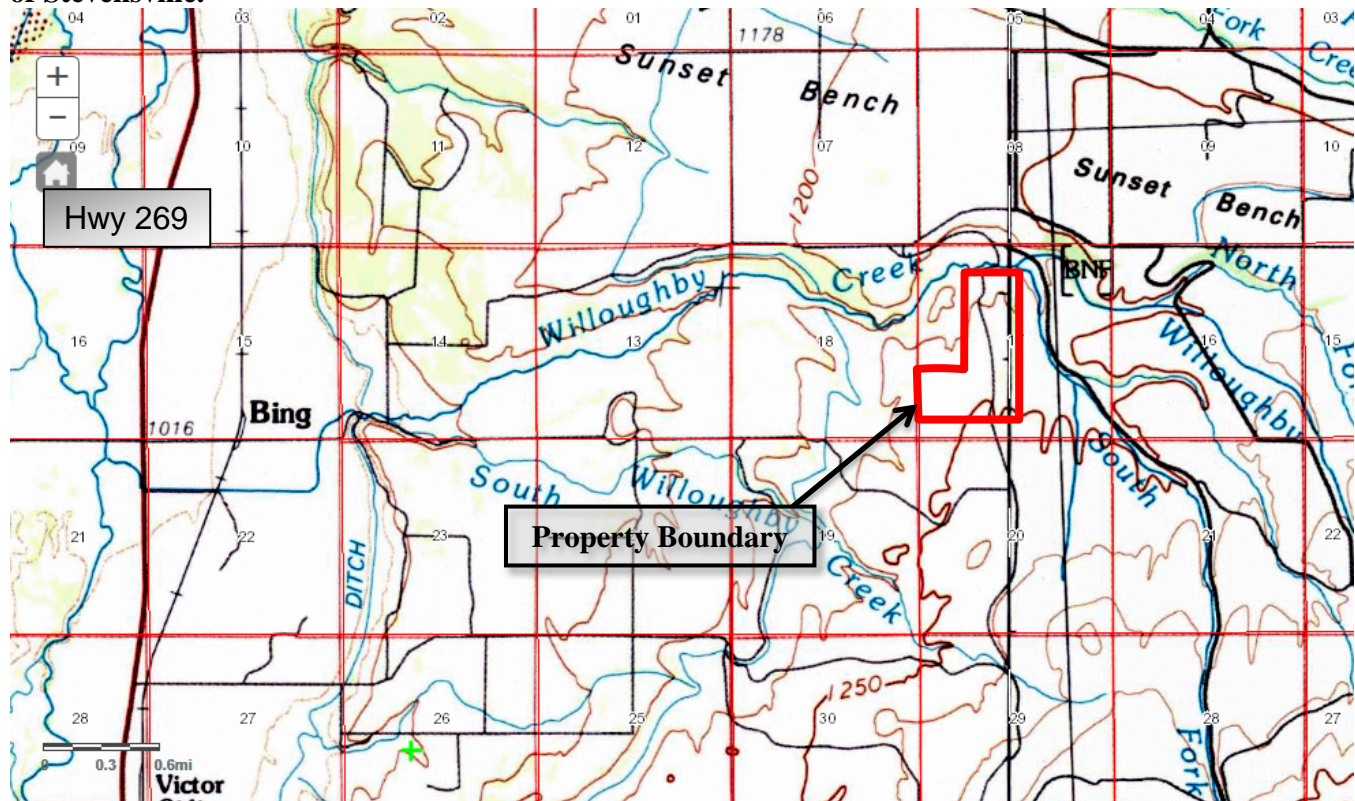
## **SECTION 2.0 – PROJECT DESCRIPTION**

On May 12, 2016, Conrad Eckert of Eckert's Patriot Pumpers (EPP) submitted a Septic Tank, Cesspool, and Privy Cleaner license application to the Department of Environmental Quality's (DEQ) Solid Waste Section's (SWS) Septic Tank Pumper Program (STP) for the approval of a new disposal site for the controlled spreading of septage and grease trap pumpings onto private land. The proposed land application site is located approximately 6¼ miles southeast of Stevensville, Montana, off Highway 269 on South Sunset Bench Road. The treatment operations would be relatively isolated from surrounding residences and promote the development of rangeland grasses by rotation. Approximately 70 acres of the property will be utilized for cyclic rotation. Separate areas of the field will be identified for periodic use including control of erosion and rotation of the nitrogen resource for revegetation as grassland.

### **Site Location:**

The proposed site, depicted in Figure 2.1, is located on 180 acres of property owned by Jay and Tracy Bugli near Stevensville. Specifically, the proposed land application site is located in the east half of the southwest-quarter of Section 17 and the north-half of the northwest-quarter of Section 20, Township 8 North, Range 19 West, Montana Principal Meridian, Ravalli County, Montana. The site entrance (lat/long 46.4506N/-114.0031W) is accessed south of town off Montana Highway 269 by heading approximately 4.7 miles east on South Sunset Bench Road connecting to McIntyre and Wild Skye roads. The site is largely undeveloped and, with the exception of a rough, 20-ft wide, dirt airstrip for small private aircraft (Rosemont Airport), it is otherwise currently utilized as natural grassy rangeland (Figure 2.2). The south-to-southeast portions of the site were previously tilled for agriculture, where the applicant proposes septage land application. The local topography of the surrounding area is dominated by a broad alluvial bench upland that gently slopes westward where Willoughby Creek drains towards the distant Bitterroot River floodplain. Areas of the property are also cut by minor dry coulees and ephemeral streams locally dominated by woodlands.

**Figure 2.1: Site map showing the 180-acre Bugli property (red) located on the eroded bench southeast of Stevensville.**



Source: NRIS Topofinder

### **Site Setback Requirements:**

The applicant will maintain the setbacks during all land application activities according to the requirements of ARM 17.50.809. The setback requirements, provided in Table 2.1, prohibit the application of pumpings within 500 feet of an inhabitable building, 150 feet of any state surface water, including wetlands and intermittent drainages, 100 feet of any county-maintained road, and 100 feet of any drinking water source. Land application is also prohibited on slopes greater than 6% and where the seasonally high groundwater is six feet or less below the ground surface.

**Table 2.1: Land Application Site Setback Requirements**

ARM Reference	Setback Requirements
17.50.809(1)	Pumpings may not be applied to land within 500 feet of any occupied or inhabitable building.
17.50.809(2)	Pumpings may not be applied to land within 150 feet of any state surface water, including ephemeral or intermittent drainages and wetlands.
17.50.809(3)	Pumpings may not be applied to land within 100 feet of any state, federal, county, or city-maintained highway or road.
17.50.809(4)	Pumpings may not be applied to land within 100 feet of a drinking water supply source.
17.50.809(6)	Pumpings may not be applied to land with slopes greater than 6%.
17.50.809(8)	Pumpings may not be applied to land where seasonally high ground water is 6 feet or less below ground surface.

## **Site Operation and Maintenance Requirements:**

The land application of septage and graywater is considered the beneficial use of a waste product when the material is applied in accordance with the regulations governing land application. The operational and crop harvesting requirements for a land application site, outlined in Tables 2.2 and 2.3, include the removal of all non-putrescible litter within six hours of application, the prohibition of septage application on frozen, flooded, or snow-covered ground if the pumpings may enter state waters, and the application at a rate not exceeding the nitrogen requirement of the grasses grown on site. Pumpings must also be either injected below the land surface, incorporated within six hours of application, or pH adjusted for at least 30 minutes prior to land application.

**Table 2.2: Land Application Site Operational Requirements**

ARM Reference	Site Restrictions/Requirements
17.50.809(10)	All non-putrescible litter must be removed from the land application site within 6 hours of application.
17.50.809(12)	Pumpings may not be applied at a rate greater than the annual application rate (AAR) of the site for crop nitrogen requirement on an annual basis.
17.50.810(1)	Pumpings may not be applied to flooded, frozen, or snow covered ground if the pumpings may enter state waters.
17.50.811(3)	Pumpings may be applied only if the person first performs one of the following vector attraction and pathogen reduction methods: <ul style="list-style-type: none"><li>• injection below the land surface so no significant amount remains on the land surface within one-hour of injection;</li><li>• incorporation into the soil surface plow layer within 6 hours of application;</li><li>• addition of alkali material so that the pH is raised to and remains at 12 or higher for a period of at least 30 minutes; or,</li><li>• management as required by 17.50.810 when the ground is frozen</li></ul>

**Table 2.3: Grazing and Crop Harvesting Restrictions**

Activity	Restriction
Growing food crops with edible parts obtained from above ground in contact with the mixed septage/soil layer	Wait at least 14 months to harvest after application of pumpings
Growing food crops with edible parts obtained from below the ground surface	Wait at least 20 months to harvest after application if pumpings remain on the land surface for four months or longer prior to incorporation into the soil
Growing food crops with edible parts obtained from below the ground surface	Wait at least 38 months to harvest after application if pumpings remain on the land surface for less than four months prior to incorporation into the soil
Growing any other food crops, feed crops, and fiber crops	Wait at least 30 days to harvest after application of pumpings
Grazing livestock	Wait at least 30 days after application if pumpings are not first alkali treated
Harvesting turf for placement on a lawn or in an area with high potential for public exposure	Wait at least one year after application if pumpings are not first alkali treated
Unrestricted public access with a high potential for public exposure	Wait at least one year after application if pumpings are not first alkali treated
Unrestricted public access with a low potential for public exposure	Wait at least 30 days after application if pumpings are not first alkali treated

The sites available for land application will be rotated on an annual basis, so that parcels used for land application one year will be inactive the next year (Figure 2.2). This rotation allows the vegetation or crop of choice to utilize the nitrogen and other nutrients added from the land application process. The yellow boundary within the south to southeastern portion of the property meets all restrictions for septage land application. Land application during periods of frozen ground is prohibited at this site.

Septage will be land applied using a splash plate to disperse the waste in a wide, thin, even layer at a beneficial rate. Septage will be incorporated into the soil surface plow layer with a tractor and tillage equipment within six-hours of application. Reasonable treatment method options include hauling the waste to a wastewater treatment plant or to a septage storage, treatment, or dewatering facility that will accept the waste and that is within 25 miles of the point of generation.

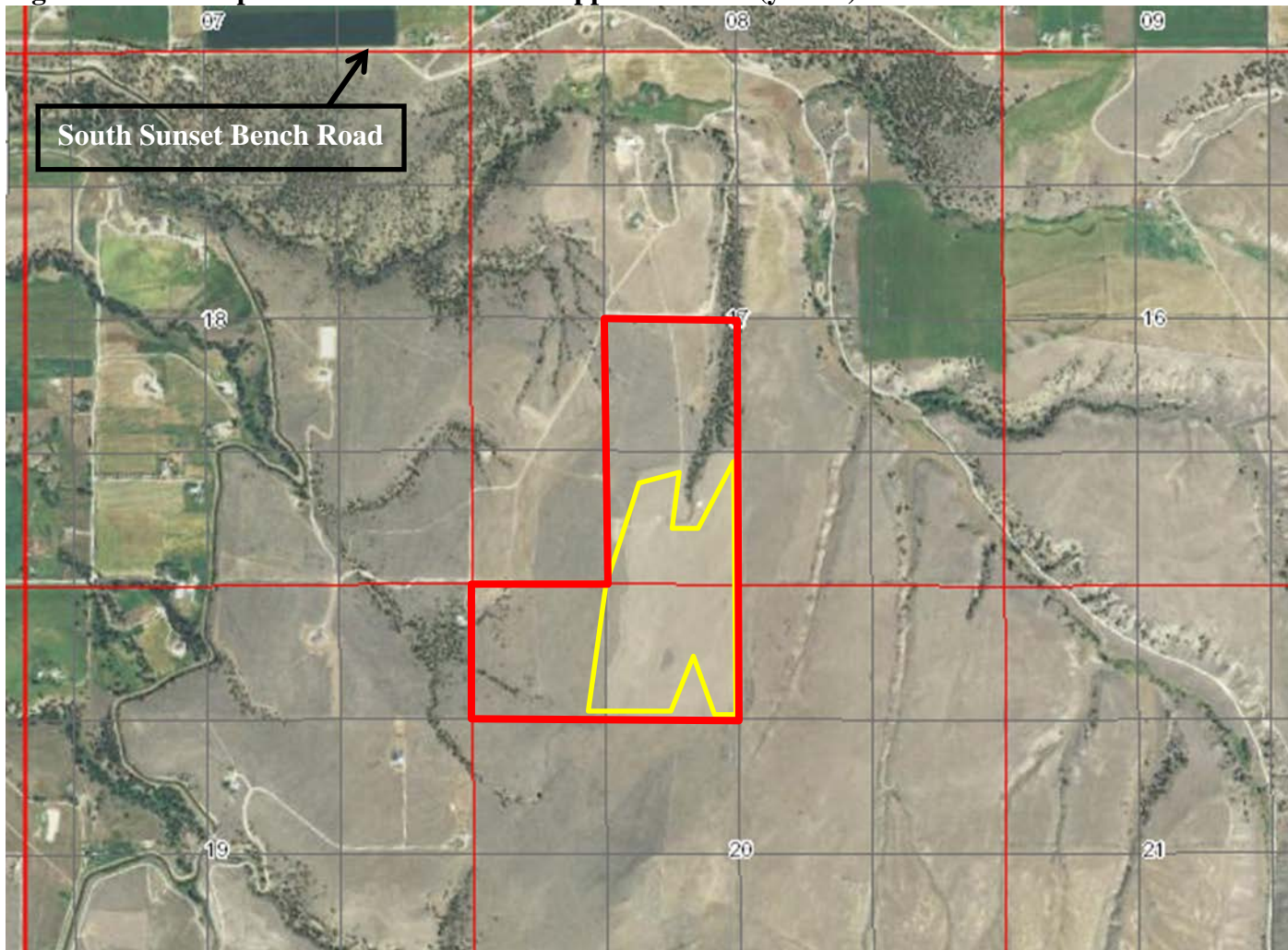
Land application will occur as-needed at a rate not exceeding the Annual Application Rate (AAR) in gallons per acre. For septage, the AAR is calculated based upon the production of a specific crop or grass, as follows:

$$\text{AAR} = \text{Crop Nitrogen Requirement} / 0.0026 \text{ for septage waste.}$$

In this case, the landowner currently uses the property for the production of pasture grass. The pasture grass at this location has a nitrogen requirement of 75 pounds/acre. The resulting AAR for septage is 28,846 gallons per acre, and is equal to approximately 1.06 inches of liquid applied per acre per year. For comparison, the average annual precipitation received during the month of September is approximately equal to the volume of septage that would be land applied per acre per year at the proposed site (Table 2.4). As the applicant has proposed, the annual volume of septage waste will not exceed 300,000 gallons per year; the annual volume of grease trap waste will not exceed 15,000 gallons per year. The proposed land application site would accommodate the proposed volumes and land application activities will not result in an exceedance of the AAR.



**Figure 2.2: Aerial photo of the 70-acre land application site (yellow).**



*Source: NRIS Topofinder*

**Site Climate:**

Table 2.4 provides a summary of monthly climate information for Stevensville, Montana. The winters in the Stevensville area are long and somewhat snowy; the summers are typically moderate. Precipitation is concentrated during the months of May and June, but slightly more falls, as snow, between November and January. March is consistently the driest month. The average annual precipitation is approximately 12.41 inches.

**Table 2.4: Climate Summary at the weather station in nearby Stevensville.**

<b>STEVENSVILLE, MONTANA (Stn. 247894)</b> <b>Period of Record: 08/23/1911 to 06/08/2016</b>													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	33.4	39.8	49.1	59.5	68.1	75.3	85.3	83.7	72.5	59.1	43.4	34.5	58.6
Average Min. Temperature (F)	15.3	19.2	24.7	30.6	37.4	44.1	47.4	45.4	38.3	30.7	23.2	17	31.1
Average Total Precipitation (in.)	1.05	0.83	0.78	0.83	1.5	1.61	0.84	0.9	1.05	0.88	1.05	1.09	12.41
Average Total Snow Fall (in.)	6.8	5.1	3.7	0.3	0.1	0	0	0	0	0.2	2.6	5	23.7
Average Snow Depth (in.)	2	2	1	0	0	0	0	0	0	0	1	2	1

Source: Western Regional Climate Center, DRI; August 2016

### SECTION 3.0 – ALTERNATIVES CONSIDERED

This section summarizes alternatives to the proposed plan, including the No Action alternative required by MEPA. MEPA requires the evaluation of reasonable alternatives to the Proposed Action. Reasonable MEPA alternatives are those that are achievable under current technology and are economically feasible as determined solely by the economic viability for similar projects having similar conditions and physical locations and determined without regard to the economic strength of the specific project sponsor. A decision by DEQ after public review is triggered when the applicant upholds the request for licensure of the proposed action.

The applicants may at any time choose to withdraw the application. This would result in DEQ selecting the “no action” alternative, because a DEQ decision would not be necessary.

DEQ is the lead agency and the Septic Pumper Program prepared this document to present three alternatives:

**Alternative A:** The “no action” alternative. This alternative will be implemented when a final decision by DEQ is not required because the applicant has withdrawn the application for approval of the land application site.

**Alternative B:** The ‘license application denied’ alternative. This alternative will be implemented if the application does not meet the minimum requirements of the Septage Disposal Licensure Act and could not continue to be processed as submitted. If denied, the applicant may modify the application for the current site and reapply for licensure, or could locate, investigate, and apply for a licensure of another site.

**Alternative C:** The ‘license application approved’ alternative. This alternative will be implemented when DEQ approves the application for licensure of the new disposal site if the application meets the requirements of the Septage Disposal Licensure Act.

In consideration of these alternatives, DEQ has not received a request by the applicant to withdraw the application for licensure. DEQ has determined the application meets the requirements of the Septage Disposal and Licensure Laws. Therefore, the potential environmental effects of Alternative C were evaluated for the proposed project based on the information provided in the application, DEQ's research on the site and the area surrounding the proposed site, and DEQ's site visit. The results of DEQ's evaluation of potential environmental effects related to the proposed land application site are summarized in Section 4.0.

## SECTION 4.0 - EVALUATION OF POTENTIAL EFFECTS

Tables 4.1 and 4.5 of this section, and the discussion that follows each, identify and evaluate the potential environmental effects on human health and the environment if the land application site is approved. A discussion of the potential impacts is analyzed in the sections below for each affected resource as numbered in the tables and identified by DEQ after evaluation of all resources listed in the tables. If no effect is identified for a resource, it may not be mentioned in the analysis. Likewise, no additional impacts on any resource are possible at the proposed site for the No Action alternative.

Direct and indirect impacts are those effects that occur in or near the proposed licensed area and might extend over time. Often, the distinction between the effects of direct and indirect impacts is difficult to identify. The following discussion of any impact or effect is meant to address both types of those issues unless noted otherwise.

**Table 4-1: Potential Impacts To The Physical Environment**

PHYSICAL ENVIRONMENT	Major	Moderate	Minor	None	Unknown	Attached
1. Terrestrial, Avian, and Aquatic Life and Habitats			✓			✓
2. Water Quality, Quantity, & Distribution				✓		✓
3. Geology				✓		✓
4. Soil Quality, Stability, & Moisture			✓			✓
5. Vegetation Cover, Quantity, & Quality			✓			✓
6. Aesthetics			✓			✓
7. Air Quality				✓		
8. Unique, Endangered, Fragile, or Limited Environmental Resources			✓			✓
9. Historical and Archaeological Sites				✓		✓
10. Demands on Environmental Resources on Land, Water or Energy				✓		

### **Analysis of Potential Impacts to the Physical Environment:** (see Table 4-1)

*This section evaluates the potential environmental effects that may occur on the physical environment for the Proposed Alternative. The number on each of the underlined resource headings corresponds to a resource as listed in the tables. Generally, only those resources potentially affected by each alternative is discussed with the preferred mitigating factors noted where appropriate. If there is no effect on a resource by either alternative, it may not be discussed.*



## 1.0 Terrestrial, Avian, and Aquatic Life and Habitats

The site is situated on a grassland bench rising eastward in the broad intermontane Bitterroot Valley flanked by rugged mountain uplifts, especially on the western margin. The proposed site is occupied by the broader semi-arid Mountain Grassland ecosystem, dominated by rolling mixed grass prairie, and dissected by low-lying intermittent and partly wooded drainages. Grasses dominate much of the adjacent landscape where agricultural land use onsite and in the adjacent area consists mostly of prairie, grazing, or hay.

The dry conditions dominating this habitat support grazing large game that is mainly limited to elk, whitetail, and mule deer. Wandering predators, like the coyote, bobcat, and fox occasionally inhabit surrounding drainages. Burrowing animals make a permanent residence here, like prairie dogs, badgers, and ground squirrels. The avian species of the area have adapted to various nesting arrangements. The burrowing owl nests below the ground in burrows, while other birds, such as the red-tailed hawk and the golden eagle, nest on cliffs and in large trees. Bald eagles are mostly found near the Bitterroot River.

A search of the Montana Natural Heritage Program found records of eleven threatened animal species in all sections of Township 8 North, Range 19 West (36 square miles) surrounding the proposed site:

Species Subgroup	Scientific Name	Common Name	Family Scientific Name	Family Common Name
Mammals (Mammalia)	<i>Gulo gulo</i>	Wolverine	Mustelidae	Weasels
Mammals (Mammalia)	<i>Pekania pennanti</i>	Fisher	Mustelidae	Weasels
Birds (Aves)	<i>Haliaeetus leucocephalus</i>	Bald Eagle*	Accipitridae	Hawks / Kites / Eagles
Birds (Aves)	<i>Aquila chrysaetos</i>	Golden Eagle	Accipitridae	Hawks / Kites / Eagles
Birds (Aves)	<i>Ardea herodias</i>	Great Blue Heron	Ardeidae	Bitterns / Egrets / Herons / Night-Herons
Birds (Aves)	<i>Artemisiospiza nevadensis</i>	Sagebrush Sparrow	Emberizidae	Sparrows
Birds (Aves)	<i>Dolichonyx oryzivorus</i>	Bobolink	Icteridae	Blackbirds
Birds (Aves)	<i>Dryocopus pileatus</i>	Pileated Woodpecker	Picidae	Woodpeckers
Birds (Aves)	<i>Nucifraga columbiana</i>	Clark's Nutcracker	Corvidae	Jays / Crows / Magpies
Fish (Actinopterygii)	<i>Oncorhynchus clarkii lewisi</i>	Westslope Cutthroat Trout	Salmonidae	Trout
Fish (Actinopterygii)	<i>Salvelinus confluentus</i>	Bull Trout	Salmonidae	Trout

\* Special status species of concern

Source: Montana Heritage Program – Species of Concern Reports from NRIS, 10/23/2016

Ten species of concern (SOC) and one special status species (SSS) were found to occupy other lands outside and beyond the proposed licensed area, extended to include all sections of Township 8 South, Range 19 West surrounding the proposed facility. The list includes two mammals, seven avian species (including the special status Bald Eagle), and two aquatic species (including the threatened Bull Trout). No other unique, endangered, fragile, or limited environmental resources were identified. The habitats for the mammal species are typically boreal forest and alpine habitats, subalpine conifer forests, and old growth conifer and riparian forests, more typical of the nearby remote Bitterroot Mountain Wilderness to the west of the site. The Bitterroot River and its tributaries nearby support the fish and other species, including the SSS Bald Eagle and threatened Bull Trout, typical of wooded mountain streams, rivers, and lakes.

Extensive grassland prairie surrounds the proposed site so that animals may migrate to relocate in adjacent fields similar to the site. Because no continuously active aquatic systems exist within the boundary of the proposed site, it is highly unlikely that there will be any significant impact to aquatic life on the site. Temporary loss of the site prairie ecosystem is not considered critical to the local animal species.

## **2.0 Water Quality, Quantity, and Distribution**

### *Surface Water*

The proposed site would be located in the Burnt Fork watershed on the United States Geological Survey (USGS) Bing 1:24,000 quadrangle (Figure 4.1). The site access at the north boundary is located approximately 1,225 feet west and 3,100 feet south of the South Fork of Willoughby Creek. Willoughby Creek is the nearest perennial stream and flows westward to the Bitterroot River. There are no wetlands or natural springs known within the proposed application site. All proposed land application areas are more than 150 feet from any other state surface water or wetlands, including onsite ephemeral drainages. Operational impacts to surface water are highly unlikely based on further controls due to the prohibition of land application during periods of frozen soil, gentle slope of the proposed application areas (maximum 6%), high available water storage capacity of the soils, and distance from Willoughby Creek. Finally, no runoff would be allowed anytime during the operations, thereby eliminating the potential for downgradient effects on the local drainage basin environment.

### *Groundwater*

The hydrogeology and groundwater resources of the Bitterroot Valley are described in Briar and Dutton (2000) and McMurtrey and Swenson (1972). The proposed land application site is located on a grassy elevated bench southeast of Stevensville, and east of the Bitterroot River. The elevation is approximately 4,100 feet above mean sea level. The Bitterroot Valley extends approximately 60 miles south from the confluence of the Bitterroot River and the Clark Fork River. Regionally, the recharged groundwater flows down from the mountain fronts along the basin margins toward the central floodplain and turns northward to flow diagonally down the valley toward the Missoula Valley aquifer.

### *Nearby Groundwater Supply Wells*

The wells in the area of the proposed land application site (Figure 4.1) are constructed in either shallow Quaternary alluvial deposits, upper Tertiary alluvial fan deposits, or underlying older locally cemented Tertiary basin fill at depth. These aquifers are comprised of largely unconsolidated sediments; therefore, groundwater is transmitted through primary (intergranular space) porosity. The basin fill sediments are cemented with depth to form confining layers. It is also possible that some wells are completed Holocene alluvial channel deposits of the ancestral Bitterroot River, with a recharge area in the southern portion of the Bitterroot watershed.

According to the Montana Bureau of Mines and Geology (MBMG) Groundwater Information Center (GWIC) records for the land sections surrounding the proposed site, there are 15 water supply wells on the adjacent properties. One of those wells is listed as stock water, one is listed for irrigation, and one is unknown. The other 12 wells are listed for domestic use. The well closest to the proposed site has groundwater in the uppermost aquifer at 24 feet below ground level. Based on this and the soil's capacity to retain the land application liquids properly discharged at the agronomic rate for the site, it is unlikely that any impacts to ground water would occur.

**Table 4.2: Summary of all groundwater wells in the sections surrounding the proposed site.**

Gwic Id	Township	Range	Section	Q Sec	Type	Total Depth	Static Water Level	Yield	Date	Use
<a href="#">57595</a>	08N	19W	17		WELL	55	8	20	7/25/1979	DOMESTIC
<a href="#">57596</a>	08N	19W	17		WELL	29			9/22/1981	UNKNOWN
<a href="#">235513</a>	08N	19W	17		BOREHOLE	161	70	20	11/13/2006	DOMESTIC
<a href="#">218262</a>	08N	19W	17	AC	WELL	60	19	60	3/29/2005	IRRIGATION
<a href="#">57597</a>	08N	19W	17	AC	WELL	30	20	20	3/9/1978	DOMESTIC
<a href="#">207198</a>	08N	19W	17	AC	WELL	290	110	7	9/8/2003	DOMESTIC
<a href="#">148033</a>	08N	19W	17	ACA	WELL	65	18.5	15	1/31/1995	DOMESTIC
<a href="#">179003</a>	08N	19W	17	BAD	WELL	42	24	10	7/25/1999	DOMESTIC
<a href="#">186690</a>	08N	19W	17	BAD	WELL	247	70	6	7/30/2000	DOMESTIC
<a href="#">57598</a>	08N	19W	17	C	WELL	260	80	10	9/27/1978	STOCK
<a href="#">239487</a>	08N	19W	17	CC	WELL	400	150	20	7/30/2007	DOMESTIC
<a href="#">162933</a>	08N	19W	17	DAD	WELL	38	21	14	7/10/1997	DOMESTIC
<a href="#">57605</a>	08N	19W	20		WELL	203	65	25	10/8/1980	DOMESTIC
<a href="#">251336</a>	08N	19W	20	BD	WELL	235	75	50	6/17/2009	DOMESTIC
<a href="#">251336</a>	08N	19W	20	BD	WELL	235	75		6/17/2009	DOMESTIC

Source: Montana Bureau of Mines and Geology, Ground Water Information Center, September 6, 2016

<sup>1</sup>The total depth column is the depth drilled, which may be deeper than the bottom of the well as completed.

<sup>2</sup>Static water level is the level of water measured in the well at the time of installation.

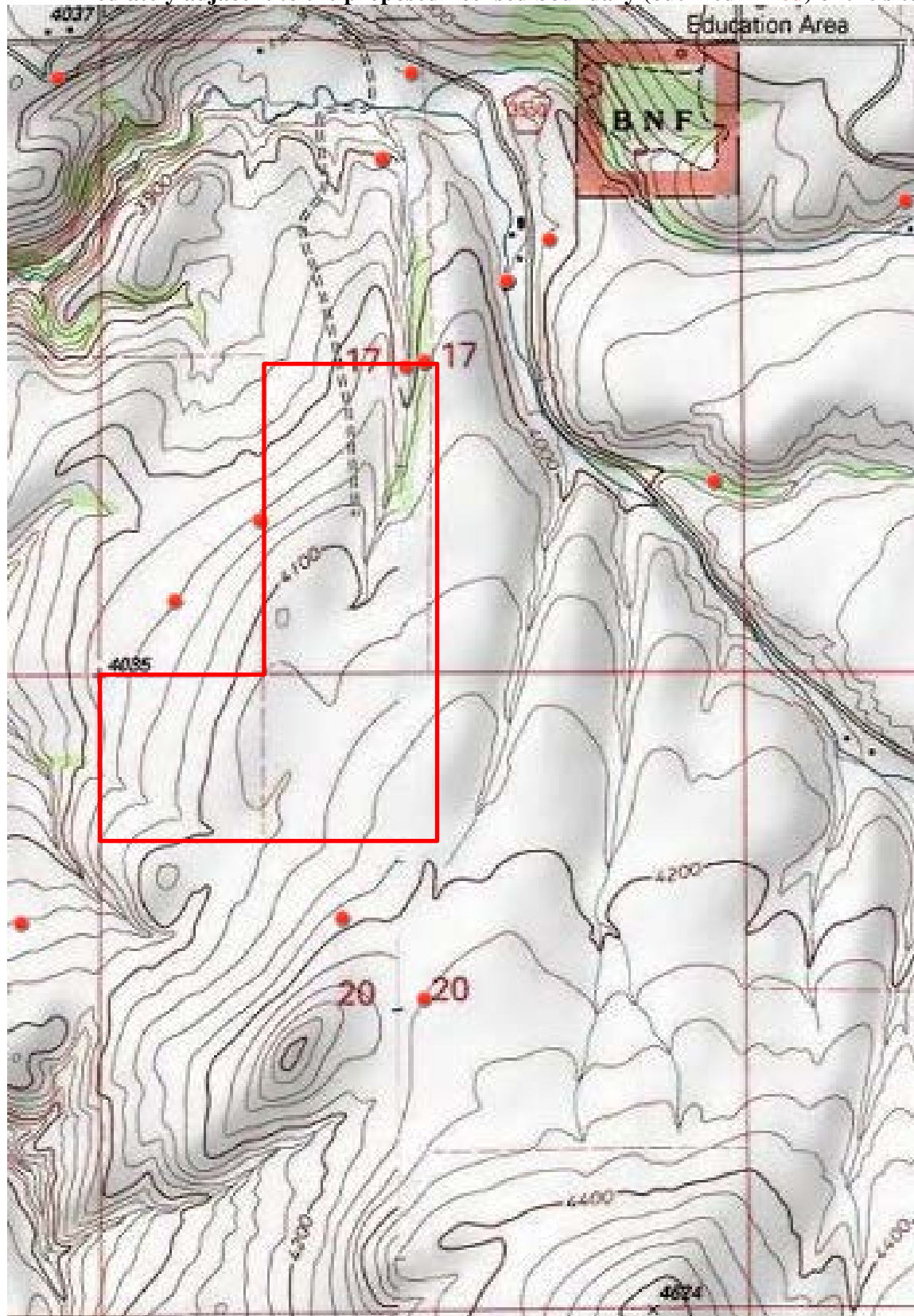
<sup>3</sup>Yield is the amount of water the well is expected to be capable of producing as reported by the well driller.

Total depth and static water levels are reported in feet below ground surface. Yield is reported in gallons per minute (gpm). All data is based upon driller's logs and may not be reported for every well.

### 3.0 Geology

The Bitterroot Valley is a structural basin, probably formed by crustal extension during uplift of the Cretaceous Idaho Batholith (Briar and Dutton, 2000) and settling as overlying Precambrian Belt rocks slid eastward. The uplifted granite front of the Bitterroot Range to the west is considerably steeper than the Sapphire range to the east. This deep basin was filled with older Tertiary and Quaternary sediments as it subsided. Recent sediments of Pleistocene glacial drift and lakebed deposits exposed at the surface of the valley are cut by and reworked into Holocene fluvial gravels of the Bitterroot River. The soils developed on site from these youngest unconsolidated sediments.

**Figure 4.1: Location of groundwater wells (red dots) located in the properties immediately adjacent to the proposed licensed boundary (outlined in red) of the site.**



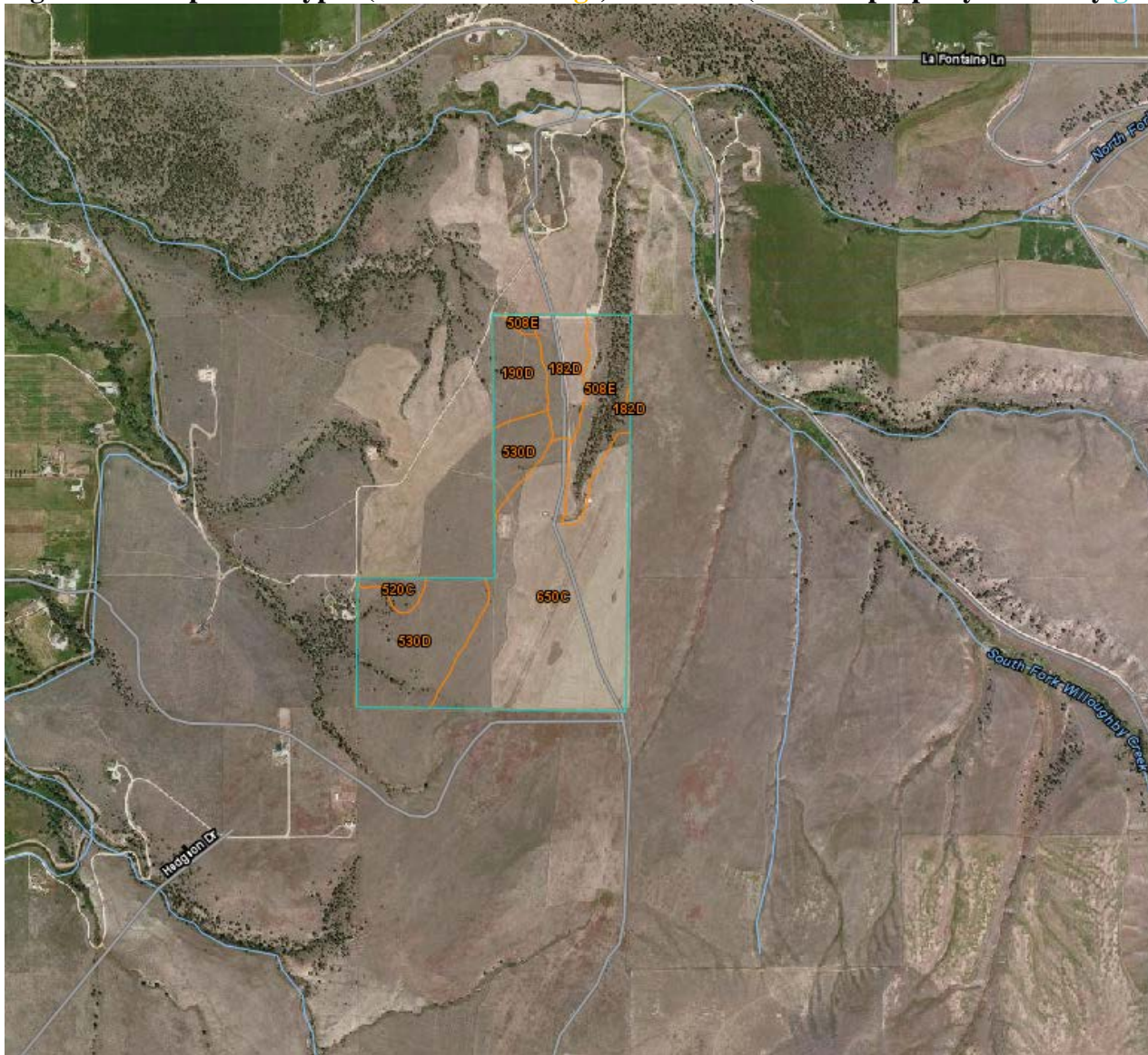
*Source: Montana Bureau of Mines and Geology (MBMG), Groundwater Information Center (GWIC)*



#### 4.0 Soil Quality – Stability and Moisture

The soils at the proposed site are shown on Figure 4.2. The dominant soil at the proposed site is the Haccke-Wemple-Farnuf complex (soil 650C on maps and in tables), at 50 percent. These preferred soils are well drained with moderate 8.9-inch water storage capacity and a potential depth to perched groundwater greater than 80 inches (6 inches more than the required minimum) on two to eight percent slopes. It may be derived from Glacial Lake Missoula sediments or glacial till. The secondary soil type is the Perma, extremely stony-Whitlash, rubbly complex (soil 530D on maps and in tables), at 23 percent. These soils are excessively drained with very low 3.5-inch water storage capacity and a depth to groundwater greater than 80 inches on eight to fifteen percent slopes.

**Figure 4.2: Map of soil types (outlined in orange) at the site (160-acre property boundary green)**



Source: *United States Department of Agriculture-Natural Resource Conservation Service (USDA-NRCS), Web Soil Survey, Ravalli County, Montana*

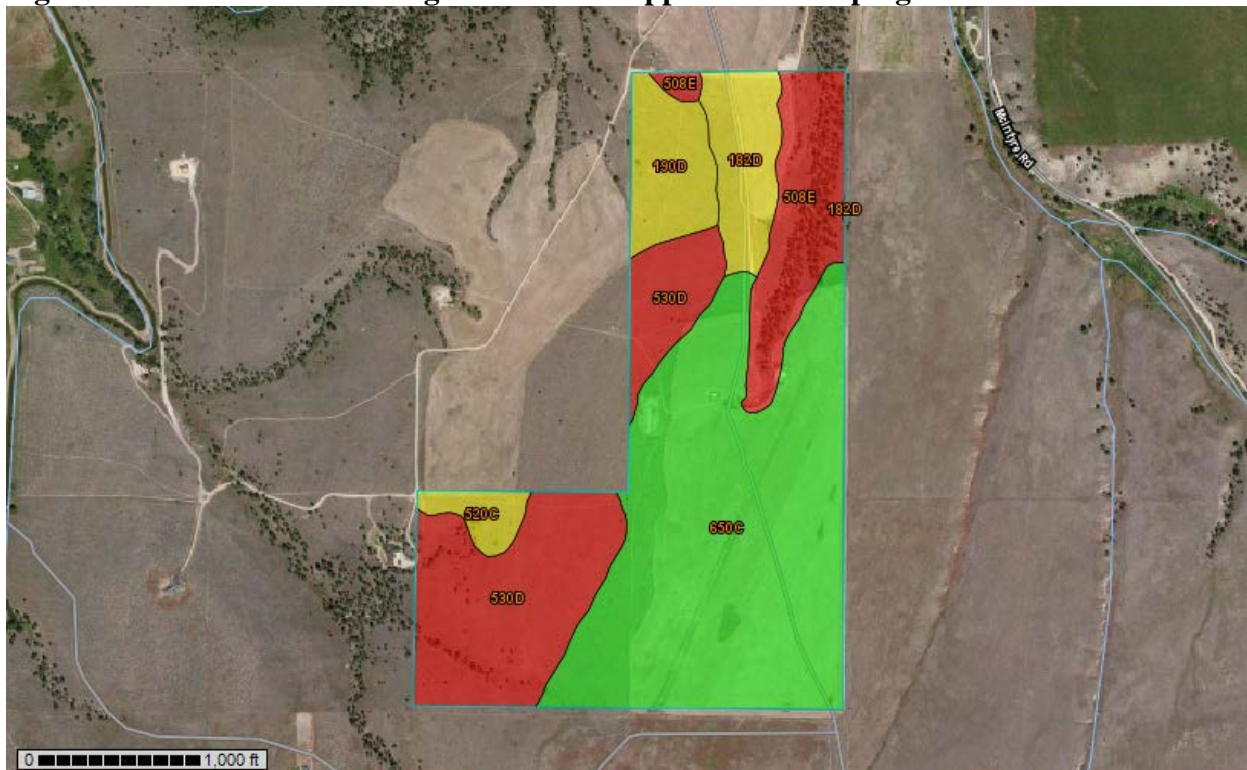
**Table 4.3: USDA-NRCS soil types mapped within the property boundary (AOI area of interest)**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
182D	Quast-Haccke complex, 8 to 15 percent slopes	11.2 acres	7.0%
190D	Woodchuck-Ravalli complex, 4 to 15 percent slopes	10.0 acres	6.6%
508E	Quigley-Brid-Wemple complex, 15 to 40 percent slopes	19.0 acres	11.8%
520C	Sawicki, stony-Whitlash, rubbly-Farnuf complex, 2 to 8 percent slopes	3.2 acres	2.0%
530D	Perma, extremely stony-Whitlash, rubbly complex, 4 to 15 percent slopes	36.8 acres	22.8%
650C	Haccke-Wemple-Farnuf complex, 2 to 8 percent slopes	80.0 acres	49.68%
<b>Totals for Area of Interest</b>		<b>160.0 acres</b>	<b>100.0%</b>

*Source: USDA-NRCS, Web Soil Survey, Ravalli County, Montana 9/2016*

Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. "Not limited" indicates that the soil features are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil features are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more unfavorable features for the specified use. The loamy soil with the highest suitability (see green area shown in Figure 2.2) for land application of septic pumpings will, based on its high water storage capacity, absorb and hold the septage in the root zone where the added nutrients can be released to enhance growth of native plant species. In addition to the effects of sunlight on pathogens during spreading at the surface, regular tilling of this type of soil as required would also promote development and maintenance of healthy soil microbes for degradation of pathogens.

**Figure 4.3: USDA-NRCS ratings for the land application of septage**



Source: USDA-NRCS, Web Soil Survey, Ravalli County, Montana 9/2016

**Table 4-4: USDA rating of mapped soil units for the land application of municipal septage (colors correlate with the sampled areas in Fig. 4.3).**

Map unit symbol	Map unit name	Rating
182D	Quast-Haccke complex	Somewhat limited
190D	Woodchuck-Ravalli complex	Somewhat limited
508E	Quigley-Brid-Wemple complex	Very limited
520C	Sawicki, stony-Whitlash, rubbly-Farnuf complex	Somewhat limited
530D	Sawicki, stony-Whitlash, rubbly-Farnuf complex	Very limited
650C	Haccke-Wemple-Farnuf complex	Not limited

Source: USDA-NRCS, Web Soil Survey, Ravalli County, Montana 9/2016

## 5.0 Vegetation Cover, Quantity and Quality

The proposed site is occupied by the broader Mountain Grassland ecosystems where indigenous plant species are adapted to extreme temperatures and low moisture. The site and surrounding area is dominated by rolling mixed grass prairie and dissected by low-lying intermittent and ephemeral drainages. Grasses dominate much of the valley landscape; however, a variety of plant covers occupy the broader region.

The semi-arid ecosystem surrounding the site is foothills prairie where undisturbed natural vegetation is typically characterized by the predominance of fescues and wheatgrasses. Agricultural land use on site and in the adjacent area currently consists of mostly prairie, grazing, or hay. Scattered grassland



wooded draw, ravine, and grassland riparian systems are developed within the permanent drainages that erode the bench upland and where a few permanent streams carry flow down to the nearby Bitterroot River toward the west.

A search of the Montana Natural Heritage Program found records of one threatened plant species in all sections of the entire township (T8N, R19W) surrounding the proposed site:

Species Subgroup	Scientific Name	Common Name	Family Scientific Name	Family Common Name
Flowering Plants -Dicots (Magnoliopsida)	Boechera fecunda	Sapphire Rockcress	Brassicaceae	Mustards

The vegetative cover, quantity, and quality of the land and its native grasses will be enhanced by the proposed activity. The land application of domestic septage provides benefits to agricultural land by the addition of organic matter, moisture, and nutrients to the soil. The land application of septage at the proposed site will result in an increased production of grasses from the added moisture, organic matter, and nutrients contained in the septage. One year of rotation between two areas, (units) would separate the land application phase from the revegetation phase.

## **6.0     Aesthetics**

The applicant noted that it is unlikely that more than four loads will be land applied on any given day of the week, thus the changes in ambient sound due to haulage, delivery, or pumping noise is not significant. Odor control and pathogen reduction would be implemented by tillage within six hours of application. The proposed private site is relatively isolated and few nearby homes were visible immediately adjacent to the property during DEQ's site visit, and as shown on the aerial photo of the site (Figure 2.2). The land application activities are similar to the day-to-day farming and ranching activities in the area and will not cause a change in the overall aesthetics of the area. Therefore, the impact to the aesthetics from the land application and tilling of septage in the local area is very likely minor.

## **8.0     Unique, Endangered, Fragile, or Limited Environmental Resources**

A search of the Montana Natural Heritage Program found that the Wolverine, Fisher, Bald Eagle, Golden Eagle, Great Blue Heron, Sagebrush Sparrow, Bobolink, Pileated Woodpecker, Clark's Nutcracker, Westslope Cutthroat Trout, Bull Trout, and Sapphire Rockcress are listed as species of concern. Designation as a species of concern is not a statutory or regulatory classification. Instead, these designations provide a basis for resource managers and decision makers to make informed, proactive decisions regarding species conservation. An intensive site survey was not conducted to verify the presence of, or impact to, sensitive, unique, endangered, or fragile plant or animal species within or adjacent to the proposed land application site. There exists adequate acreage of similar habitat available in the immediate vicinity of the proposed site to accommodate any relocated mobile species. The impact to these resources is minor.



## 9.0 Historical and Archaeological Site

A cultural resource file search was conducted for the proposed location and indicated that there have been no previously recorded sites within the area. The State Historic Preservation Office stated that there is a low likelihood that cultural properties will be impacted and therefore a cultural resource inventory is unwarranted at this time. Should cultural materials be inadvertently discovered during proposed operations at this site, the State Historic Preservation Office would be notified immediately.

**Table 4-5: Potential Impacts To The Human Environment**

HUMAN ENVIRONMENT	Major	Moderate	Minor	None	Unknown	Attached
1. Social Structures & Mores:				✓		
2. Cultural Uniqueness & Diversity:				✓		
3. Density & Distribution or Population & Housing:				✓		
3. Human Health & Safety:				✓		✓
5. Community & Personal Income:				✓		
6. Quantity & Distribution of Employment:				✓		
7. Local & State Tax Base Revenues:				✓		
8. Deman for Government Services:				✓		✓
9. Industrial, Commercial, & Agricultural Activities, & Production:				✓		
10. Access to & Quality of Recreational & Wilderness Activities:				✓		
11. Locally Adopted Environmental Plans & Goals:				✓		
12. Transportation:				✓		✓

### **Analysis of Potential Impacts On Human Environment (see Table 4-5)**

*This section evaluates the potential environmental effects that may occur on the physical environment for the Proposed Alternative. The number on each of the underlined resource headings corresponds to a resource listed in the tables. Generally, only those resources potentially affected by each alternative are discussed with the preferred mitigating factors noted where appropriate. If there is no effect on a resource by either alternative, it may not be discussed.*

## 4.0 Human Health & Safety

The septage and grease trap waste will be land applied at the site on an as needed basis. Pumpings will be land applied using either a spreader bar or a splash plate to disperse the waste in a wide, thin, even layer. It does not result in the production of an aerosol, but rather ensures that septage is applied in a beneficial manner that avoids ponding or runoff when flow is properly adjusted for truck speed. Pumpings will be incorporated into the soil surface plow layer with a tractor and tillage equipment within six hours of application. There are no additional health or safety concerns when the site is operated in accordance with the laws and rules for licensed septic pumper operations. No impacts on human health and safety are anticipated.

## 8.0 Demand for Government Services

The Ravalli County Public Health Department and DEQ Solid Waste Section will conduct periodic inspections at the site. These regular efforts are a minor impact on demand for government services.

## **12.0 Transportation**

The land application site is accessed south of Stevensville on Montana Highway 269 by heading approximately 4.7 miles east on South Sunset Bench Road, connecting to McIntyre and Wild Skye roads. This route currently supports significant traffic to homes, farms, and ranches. The site will be used on an as-needed basis by the applicant and will not cause a significant increase in traffic on Highway 2 or Pipe Creek Road. There are no additional anticipated impacts on transportation.

## **SECTION 5.0 CONCLUSIONS AND RECOMMENDATIONS**

### **Evaluation of mitigation, stipulations, and other controls enforceable by the agency or another government agency:**

The proposed land application site, Operation and Maintenance (O&M) Plan will meet the requirements of the Montana Septage Disposal and Licensure Law, the Air and Water Quality Acts, and other Montana environmental laws and regulations, as well as county ordinances. Adherence to the regulations and the approved O&M Plan will mitigate the potential for harmful releases and impacts to human health and the environment by the proposed activity at the site.

### **Findings:**

MEPA requires State agencies to conduct an environmental review when making decision or planning activities that may have a significant impact on the environment. MEPA and the administrative rules promulgated under MEPA define the process to be followed when conducting an environmental review. The Draft and Final EA that DEQ prepared in regard to EPP's application for approval of the land application site complies with the procedural requirements of MEPA.

The Septage Disposal - Licensure Law (SDLL) recognizes that the health and welfare of Montana citizens is endangered by improperly operated and unregulated disposal of wastes. The SDLL and associated Administrative Rules regulate septic tank pumpers and land application sites to protect the public health and safety and to conserve natural resources whenever possible (Section 75-10-202, MCA). The basic objective of the land application site approval is to establish a site for the on-going disposal of septage that provides nutrients, moisture, and organic matter to soils that will enhance vegetative growth.

The site will be operated according to the SDLL and Administrative Rules for land application. The applicant will submit disposal records recording the dates and times of land application and incorporation and the general areas where septage is applied on the site. The site will also be inspected on a regular basis to verify compliance with the SDLL.

### **Other groups or agencies contacted or which may have overlapping jurisdiction:**

Ravalli County Public Health Department  
Montana Department of Natural Resources and Conservation  
Montana Department of Environmental Quality

### **Individuals or groups contributing to this EA:**

Conrad Eckert – Eckert's Patriot Pumpers  
Tim Miller, Site slope and flowline analysis  
Montana State Library - Natural Resource Information System  
U.S. Department of Agriculture - Natural Resource Conservation Service

Montana Natural Heritage Program  
Montana State University Extension Service  
Montana Department of Natural Resources and Conservation  
Montana Historical Society State Historic Preservation Office  
Montana Bureau of Mines and Geology  
U.S. Geological Survey

**References:**

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United States Environmental Protection Agency, Biosolids, <https://www.epa.gov/biosolids/land-application-sewage-sludge>

Western Regional Climate Center, Prevailing Wind Direction data from the Sidney Municipal Airport, <http://www.wrcc.dri.edu/htmlfiles/westwinddir.html>

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**Date:** February 21, 2017